

Application No.: 09/648,455

Docket No.: 500.38949X00

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A semiconductor device comprising a semiconductor substrate, and aluminum conductors formed in a plurality of layers on a side portion of a main face of the substrate which aluminum conductors comprise aluminum as a main constituent thereof, said aluminum conductors containing copper and nickel to suppress diffusion of said copper between said aluminum conductors.

2. (Currently Amended) A semiconductor device according to claim 1, wherein said aluminum conductors each have at least one area in which conductor spacing between each said aluminum conductor and an adjacent aluminum conductor is not more than 0.4 μm .

3. (Original) A semiconductor device according to claim 2, wherein the content of nickel contained in said aluminum conductors is not less than 0.02 at.% but not more than 1 at.%.

4. (Previously Presented) A semiconductor device comprising a semiconductor substrate, and a plurality of aluminum conductors formed adjacent to one another on a portion of a main face of the substrate which aluminum conductors

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comprise aluminum as a main constituent thereof, a film adjacent to said aluminum conductors which adjacent film comprises titanium or titanium nitride as a main constituent thereof, said aluminum conductors containing copper and nickel.

5. – 9. (Canceled).

10. (Previously Presented) A semiconductor device comprising a semiconductor substrate, and aluminum conductors formed on a portion of a main face of the substrate which aluminum conductors comprise aluminum as a main constituent thereof, said aluminum conductors having at least one area in which conductor spacing is not more than 0.4 μm , a film adjacent to said aluminum conductors which adjacent film comprises one kind selected from the group consisting of ruthenium, platinum and iridium as main constituent thereof, said aluminum conductors containing copper, wherein said aluminum conductors contain nickel not less than 0.02 at.% but not more than 1 at.%.

11. (Original) A semiconductor device according to claim 9,
wherein said aluminum conductors contain silicon not less than 0.05 at.% but not more than 0.4 at.%.

12. (Previously Presented) A semiconductor device comprising a semiconductor substrate, and aluminum conductors formed on a portion of a main face of the substrate which aluminum conductors comprise aluminum as a main constituent thereof, said aluminum conductors containing copper and nickel, wherein

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each of the aluminum conductors has at least one area in which conductor spacing is not more than $0.4\ \mu\text{m}$ and wherein the content of nickel contained in said aluminum conductors is not less than 0.2 at.% but not more than 1 at. %

13. (Previously Presented) A semiconductor device comprising:

a semiconductor substrate,

a plurality of aluminum conductors formed adjacent to one another on a portion of a main face of the substrate which aluminum conductors comprise aluminum as a main constituent thereof, said aluminum conductors containing copper; and

means for suppressing diffusion of copper atoms in said aluminum conductors to prevent precipitation of the copper from one of said aluminum conductors to an adjacent one of said aluminum conductors.

14. (Previously Presented) A semiconductor device according to claim 13, wherein said means for suppressing diffusion of copper atoms comprises nickel added to said aluminum conductors.

15. (Previously Presented) A semiconductor device comprising a semiconductor substrate, and a plurality of aluminum conductors formed adjacent to one another on a portion of a main face of the substrate which aluminum conductors comprise aluminum as a main constituent thereof, said aluminum conductors containing copper and also containing nickel in an amount sufficient to prevent precipitation of said copper between adjacent ones of said aluminum conductors.

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16. (Previously Presented) A semiconductor device according to claim 1, further comprising an insulating film overlying said aluminum conductors on said portion of a main face of the substrate.

17. (Previously Presented) A semiconductor device according to claim 4, further comprising an insulating film overlying said aluminum conductors on said portion of a main face of the substrate.

18. (Previously Presented) A semiconductor device according to claim 10, further comprising an insulating film overlying said aluminum conductors on said portion of a main face of the substrate.

19. (Previously Presented) A semiconductor device according to claim 13, further comprising an insulating film overlying said aluminum conductors on said portion of a main face of the substrate.

20. (Previously Presented) A semiconductor device according to claim 15, further comprising an insulating film overlying said aluminum conductors on said portion of a main face of the substrate.

21. (Previously Presented) A semiconductor device according to claim 1, wherein an interconnect pattern of the aluminum conductors is formed by being etched, and the nickel in the aluminum conductors is of a sufficient amount to prevent a precipitation of the copper in the aluminum conductors so that precipitate

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containing copper is prevented from remaining during the etching to prevent a short in the interconnect pattern caused by the precipitate containing the copper.

22. (Previously Presented) A semiconductor device according to claim 4, wherein an interconnect pattern of the aluminum conductors is formed by being etched, and the nickel in the aluminum conductors is of a sufficient amount to prevent a precipitation of the copper in the aluminum conductors so that precipitate containing copper is prevented from remaining during the etching to prevent a short in the interconnect pattern caused by the precipitate containing the copper.

23. (Previously Presented) A semiconductor device according to claim 13, wherein an interconnect pattern of the aluminum conductors is formed by being etched, and the means for suppressing diffusion of copper atoms comprises nickel being provided in the aluminum conductors in a sufficient amount to prevent the precipitation of the copper in the aluminum conductors so that precipitate containing copper is prevented from remaining during the etching to prevent a short in the interconnect pattern caused by the precipitate containing the copper.

24. (Previously Presented) A semiconductor device according to claim 1, wherein one of the aluminum conductors is electrically connected to the semiconductor substrate through a plug.

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25. (Previously Presented) A semiconductor device according to claim 4, wherein said aluminum conductors have at least one area in which conductor spacing is not more than 0.4 μm .

26. (Previously Presented) A semiconductor device according to claim 10, wherein said aluminum conductors have at least one area in which conductor spacing is not more than 0.4 μm .

27. (Previously Presented) A semiconductor device according to claim 12, wherein said aluminum conductors have at least one area in which conductor spacing is not more than 0.4 μm .

28. (Previously Presented) A semiconductor device according to claim 13, wherein said aluminum conductors have at least one area in which conductor spacing is not more than 0.4 μm .

29. (Previously Presented) A semiconductor device according to claim 15, wherein said aluminum conductors have at least one area in which conductor spacing is not more than 0.4 μm .

30. (Previously Presented) A semiconductor device according to claim 21, wherein said aluminum conductors have at least one area in which conductor spacing is not more than 0.4 μm .

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31. (Previously Presented) A semiconductor device according to claim 22, wherein said aluminum conductors have at least one area in which conductor spacing is not more than 0.4 μm .

32. (Previously Presented) A semiconductor device according to claim 23, wherein said aluminum conductors have at least one area in which conductor spacing is not more than 0.4 μm .

33. (New) A semiconductor device according to claim 1, wherein each of the aluminum conductors extends parallel to the main face of the substrate to electrically connect portions on the substrate to each other, which portions are separated from each other along the main face of the substrate.